PPMI. PPMI defined as 3-fold increase in CK-MB or troponin-I after procedure and patients initially diagnosed with MI excluded.

Results: In multivariate analysis, the independent predictors for PPMI after bifurcation stenting were acute closure in side branch, unstable angina, more than 30mm in total stent length of parent vessel (PV), left main or 3 vessel disease, and Taxus® in PV (HR=4.177; 95% CI=1.993-8.756, HR=2.283; 95% CI=1.581-3.297; HR=1.035; 95% CI=1.014-1.057, HR=1.759; 95% CI=1.220-2.353 and HR=1.717; 95% CI=1.194-2.468 respectively). During 22-month follow-up, there was no difference in mortality between PPMI and no PPMI group (46.3% vs. 81.7%, p=0.168). Propensity score-adjusted Cox regression analysis showed that the PPMI was not a significant predictor of mortality (adjusted HR 0.749; 95% CI 0.166 – 3.648, p=0.777).

Conclusion: In the bifurcation stenting, although PPMI is still occurred frequently, however, it isn’t significantly associated with long-term mortality.

TCT-300
Procedural outcomes from the European Sideguard Registry
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Background: The provisional approach has become the default strategy in bifurcation PCI. However, there are some inherent limitations of the provisional approach including the acceptance of a suboptimal result at the side branch (SB) and the risk of SB compromise or even occlusion. A dedicated SB stent may overcome some of these limitations of provisional stenting by facilitating the procedure. However, there are limited data to support this approach.

Methods: We performed a retrospective cross-sectional survey of the current practice of provisional stenting for the bifurcation. The survey collected procedural data of 110 bifurcations most recently treated with a provisional approach in 4 centres. We then compared these data with patients enrolled in the multi-centre European registry of true bifurcations treated with Sideguard (Cappella Inc., Galway, Ireland) dedicated SB stent. The primary endpoint of the study was SB failure defined as: residual SB stenosis≥50%; inability to re-access the SB after main branch (MB) treatment; dissection of the SB; and need for cross-over to SB stenting.

Results: Almost all lesions treated were true bifurcations in both the provisional and Sideguard groups (97% vs. 96%). Procedural success was high in both groups (97% vs. 96%). In the provisional group, the SB was stented in 15% of cases and 22% had a SB residual stenosis≥50% at the end of the procedure. The primary endpoint of SB failure occurred significantly more frequently in the provisional group (33% vs. 5%; p=0.01). Procedural (78±29 mins; p=NS) and flouroscopy time (21.2±16.8 mins, p=NS) were similar in both groups.

Conclusion: SB ostial protection with the Sideguard device reduces SB failure in comparison to provisional stenting without increasing procedural time. The Sideguard dedicated bifurcation stent could facilitate bifurcation PCI and make the procedure more predictable and safe. This approach requires further evaluation in a randomized controlled trial.

TCT-301
Sequential Side Branch and Main Vessel Dilation instead of Kissing Balloon after Provisional Bifurcation Stenting: Lessons from Micro-CT and Computational Simulations
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Background: Provisional stenting is now the default approach for treatment of bifurcation lesions. It is however still controversial whether dilation of the Side Branch (SB) after Main Vessel (MV) stenting is beneficial and when Kissing Balloon (KB) inflation should be performed.

Methods: Optimisation using final KB technique was compared with a simpler sequential approach SB-MV dilation without optimization of a set of drug eluting stents (n=26) delivered in a bench model of a representative coronary bifurcation. Stent apposition and stent area was quantified at different locations along the MV from micro-CT scans. Vessel wall stresses and detailed reconstruction of blood flow patterns were obtained in the model using Finite Element Analysis (FEA) and Computational Fluid Dynamics (CFD).

Results: SB ostial stenosis was on average 20.9 ± 8.7% after KB and 25.6 ± 11.6% after 2-step sequential optimization (p=0.25, ns) compared to 69.2 ± 7.8% without SB dilation, p<0.0001. Differences were observed between the stent platforms: CoCr and PCT stents producing higher ostial stenosis than SS based platforms (respectively 27.3 ± 8.5% and 20.0 ± 10.2%, p<0.06). KB induced a significant asymmetric expansion of the lumen proximal to the SB and led to a higher risk of incomplete stent apposition at the proximal stent edge (36.4 ± 9.8% vs. 3.8 ± 10.1% for 2-step, p=0.0016). SB dilation alone without further MV post-dilation is associated distortion of the stent at the MV ostium, resulting in a high risk of stent malapposition opposite the SB. Rate of malapposition in the bifurcation after KB and 2-Step was respectively 22.1 ± 8.9% and 26.6 ± 8.9%, a significant reduction compared to SB dilation (55.3 ± 16.8%, p<0.0001) or MV stenting only (47.0 ± 8.5%, p=0.0005).

Conclusion: Sequential 2-step post-dilation of the SB and MV may be a suitable alternative to final Kissing Balloon Inflation after provisional stenting of bifurcations.

TCT-302
Long-term follow up of sirolimus-eluting stent(SES) implanted in coronary bifurcation lesion: Insight from OCT observations
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Background: Treatment of coronary bifurcation lesion by drug eluting stent (DES) reduced the restenosis and major adverse cardiac events compared to bare metal stent (BMS). Several study evaluated the tissue formation on the jailed strut at follow-up term post-DES implant by OCT. The serial change of jailed struts at long-term after implantation has not been clarified. The aim of this study was to evaluate serial change of tissue formation at bifurcation lesions.

Methods: 20 true coronary bifurcation lesions treated with sirolimus eluting stent (SES) were analyzed by serial optical coherence tomography (OCT) follow-up at 6 month and very late phase (43 to 73 months). We evaluated stent apposition and coverage of neointimal tissue on the strut. Thickness of neointima were measured for apposed strut, jailed strut and thickness of tissue surrounding jailed strut. The change of thrombus formation was also assessed.

Results: Neointimal thickness of non-jailed (well-apposed) strut increased from 6-month to very late phase, and on jailed strut, both neointimal tissue thickness (67.0±19.2 to 114.0±64.9mμ, P<0.05) and whole tissue thickness (332.0±165.8 to 430.7±138.3mμ, P<0.05) increased. %uncovered strut at bifurcation lesion were decreased (7.5±7.7% to 4.1±5.6%, P<0.05). The frequency of thrombosis on jailed struts at 6 months were 40% (8/20) lesions, which disappeared at very late phase.
Conclusion: Serial OCT follow-up revealed delayed tissue coverage onto both jailed and non-jailed struts and resolution of thrombus attachment, suggesting long-term safety of SES implantation to bifurcation lesion.

TCT-303
Favorable Long-Term Clinical Outcomes Of Intravascular Ultrasound-Guided Provisional Single Stent Strategy for Feasible Unprotected Left Main Trunk Distal Bifurcation Lesions

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Background: Though drug-eluting stents have dramatically improved the clinical outcomes, percutaneous intervention for left main trunk (LMT) distal bifurcation lesions is still challenging because of high rate of target lesion revascularization (TLR), stent thrombosis (ST) and mortality. Recently, superiority of provisional single-stent strategy for feasible lesions showed favorable long-term clinical outcomes. However, long-term efficacy of this strategy for bifurcation lesions has been reported. To report the long-term efficacy of provisional single stent strategy in a single center. Sirolimus-eluting stents were deployed in all the cases. PCI were avoided whatever possible if the lesion by scheduled provisional single-stent strategy. Major adverse cardiac events (MACE), TLR, cardiac death, and ST were performed. Major adverse cardiac events (MACE), TLR, cardiac death, and ST were equally represented in the two groups (1,5% vs 2,8%, p=0,001). At Cox regression, DES usage is independently related to greater free from mace survival (95% CI HR 0,6-0,9, p=0,04). On other hand, restenosis as indication for PCI is a MACE predictor (95% CI HR 1,6-2,8, p<0,001). In this setting, no differences are detected between provisional stenting and both branches PCI.

Conclusion: Despite the complex lesion subset of true bifurcations, single stent use (provisional approach) is related to better results in term of TLR and MACE, with similar overall survival at middle term follow up, even after double antiplatelet per protocol discontinuation.

TCT-304
True Bifurcation: a Special Subset?

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Background: Coronary bifurcation percutaneous treatment represents a special coronary artery disease subset. Various techniques are been used treating these lesions, but few data are available regarding “true” bifurcation lesions (Medina 1,1,1). We evaluated major adverse cardiovascular events (MACE) trend in a nation-wide retrospective registry of patients that underwent coronary bifurcation percutaneous treatment, comparing provisional stenting technique versus both branches PCI.

Results: We enrolled 2447 patients, with a mean follow up of 32 months (±16). 1271 were assigned to provisional group (PG, 52% of cases) and both branches PCI (BB). Mean age was 64 years (±12 (p=0,7)), LVEF 53% (±0,4), diabetes was present in 38% and 35% (p=0,4), chronic kidney disease in 9,7% (p=0,6). Multivessel disease was 39% and 36% (p=0,3) of patients. 4,6% of PCI were performed due bifurcation restenosis in PG instead 7,6% in BB group (p=0,002). 17% of PG patients underwent PCI due acute coronary syndrome in front of 11% of BB patients (p<0,001). Double antiplatelet therapy duration was significantly shorter in PG (8,5 months vs 11, p<0,001) and DES usage was less represented (37% vs 43%, p=0,001). Stent thrombosis was equally represented in the two groups (1,5% vs 2,8%, p=0,03). At univariate analysis, DES is related to better survival free from PCI (95% CI HR 0,6-0,9, p=0,04). At Cox regression, DES usage is independently related to greater free from mace survival (95% CI HR 0,6-0,9, p=0,04). On other hand, restenosis as indication for PCI is a MACE predictor (95% CI HR 1,6-2,8, p<0,001). In this setting, no differences are detected between provisional stenting and both branches PCI.

Conclusion: Despite the complex lesion subset of true bifurcations, single stent use (provisional approach) is related to better results in term of TLR and MACE, with similar overall survival at middle term follow up, even after double antiplatelet protocol discontinuation.

TCT-305
Left Main Percutaneous Coronary Intervention in Spain. The National Registry RENACIMIENTO

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Background: Left main percutaneous coronary intervention has increased in Spain. However, there is limited data about the outcome of these patients. Methods: Multicentered observational, prospective registry, that included all consecutive patients with severe left main coronary artery (LMCA) disease treated percutaneously at 30 centers We describe patient and procedure characteristics and follow-up at 6 and 12 months.

Results: Between 2007 and 2008, 782 patients were enrolled. 74.6% were men, mean age was 70.8 ± 11.1 years, 41.9% were diabetic. Main indications for PCI were unstable angina/STEMI in 49.8% and STEMI in 11.3%. A 7% had cardiogenic shock. 54.5% were distal LMCA lesions, and 46.3% had both branch ostia involvement. Mean stenosis was 74.2±15.4%, being calcified lesions 50.3%. IVUS was used in 24.8%. 86% was treated with a single stent approach, 43.4% limited to LM and 41.5% extending to the LAD. A 2-stent-technique was used, the crush stenting technique was the preferred. DES was used in 79.9%. The success rate was 94.6%. In-hospital mortality was 2.3%, excluding patients with cardiogenic shock and STEMI at presentation. Follow-up at 6 months: 13% patients had angina or ischemia. At 12 months 15.1% patients had to be admitted to hospital, mainly due to angina or myocardial infarction. Clinical restenosis rate was 2.5% confined to LM, 17.9% in the ostium of the circumflex and 13.5% in the ostium of the LAD. MACE was 27.2% (including those patients with cardiogenic shock and myocardial infarction at baseline). Multivariate logistic regression analysis showed as independent risk factors for new revascularization a technique with more than one stent implanted, and left circumflex ostium involvement.

Conclusion: PCI in LMCA in Spain is performed mainly in complex lesions, with a very low mortality in patients without cardiogenic shock. A single stent approach is the preferred technique. Among patients with distal LMCA lesions, left circumflex ostium involvement and a technique that used more than one stent were associated with a higher rate of repeat revascularization.